

CONTRIBUTIONS TOWARD A KNOWLEDGE OF THE ORTHOPTERA
OF JAPAN AND KOREA, I.—ACRIDIDÆ.

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The specimens which form the basis of this contribution are contained in the collection of the Academy, and are principally from three sources:

1. A series presented by Dr. H. C. Wood, simply labeled Japan, but in all probability from Yeso, as all the forms show Siberian affinities.

2. An excellent series from Kioto, purchased by the Academy from Mr. Y. Hirase.

3. A small series from Yokohama, contained in the Rehn Collection.

Family **ACRIDIDÆ**.

Subfamily **Acrydiinæ** (*Tettiginæ* Auct.)

Acrydium japonicum (Bolivar).

1889. *T[ettix] japonicus* Bolivar, Ann. Soc. Ent. de Belgique, XXXI, p. 263.

Four specimens, 3 males, 1 nymph.

Japan. Dr. H. C. Wood.

Subfamily **Acridinæ** (*Truxalinæ* Auct.).

Acrida nasuta (Linnaeus).

1758. [*Gryllus*] (*Acrida*) *nasutus* Linnaeus, Syst. Nat., X ed., p. 427.

Fifty-six specimens, 25 males, 28 females, 3 nymphs.

Chemulpo, Korea. Dr. W. H. Jones (7).

Japan. Dr. H. C. Wood (7).

Yokohama, Japan. Rev. H. Loomis (7). Rehn Collection.

Kioto, Japan. Y. Hirase (35), Nos. 14 and 15.

Both extreme color phases of this species are represented in the series, with many intermediates exhibiting a complete transition from the uniform green to the ochraceous and umber form.

Parapleurus fastigiatus n. sp.

Types, ♂ and ♀, Japan. Dr. H. C. Wood.

Allied to *P. alliaceus* (Germar), but differing in the greater ex-

tension of the preocular portion of the head (thus producing an extended frontal costa and triangularly acuminate fastigium), and in the lesser development of the mediastine and scapular area of the tegmina. No relationship exists with *P. fasciatus* Brunner,¹ which approaches *Duronio* in possessing partial lateral carinae.

♂.—Head with the vertex tumid, a slight longitudinal sulcus being present; fastigium considerably produced, excavated, apex narrowly truncate, the lateral carinae well marked, only a trace being visible of the median carina; frontal costa constricted below the ocellus, strongly expanded ventrad, sulcate throughout the entire length, punctate in the dorsal portion; eyes rather prominent, ovate; antennae slightly depressed, twice as long as the head and pronotum. Pronotum subcylindrical, cephalic border subtruncate, caudal rotundate, median carina distinct, cut about the middle by the transverse sulcus; lateral lobes equally long as broad, the ventral margin deeply sinuate cephalad. Tegmina rather elongate, extending a considerable distance beyond both the abdominal apex and the hind femora; mediastine and scapular areas elongate, not dilated. Mesosternal lobes separated by an interspace much longer than broad; metasternal lobes almost confluent. Subgenital plate acuminate, possessing a distinct keel on the dorsal surface. Posterior femora slender, genicular lobes rotund-angulate; tibiae not equaling the femora, bearing twelve spines on the external margin, ten to eleven spines on the internal margins.

♀.—Head with the fastigium rather broad, obtuse-angulate, the apex narrowly truncate, excavated but with no trace of a median carina; frontal costa constricted below the ocellus, moderately expanded ventrad, shallowly sulcate throughout the entire length, punctate dorsad; eyes of medium size, ovate; antennae slightly longer than head and pronotum. Tegmina slightly exceeding the apex of the abdomen. Mesosternal lobes separated by an interspace subquadrate in outline; metasternal lobes considerably separated by a rectangular interspace. Posterior tibiae with ten to eleven spines on the external and eleven spines on the internal margins.

General color (specimens taken from spirits and dried) dull yellowish-brown; postocular streak blackish, this streak extending

¹ *Rev. Syst. Orthopt.*, p. 127.

to the middle of the tegmina, in scapular area of the latter whitish; genicular arches and the tips of the spines on the posterior femora black.

Measurements.

	♂	♀
Length of head and body,	20 mm.	29 mm.
Length of pronotum,	4 "	5 "
Length of tegmina,	18 "	22 "
Length of hind femora,	13.5 "	16 "

Total number of specimens examined 4, 2 males and 2 females.

Chrysochraon japonicus Bolivar.

1898. *Chrysochraon japonicus* Bolivar, Ann. Mus. Civ. Stor. Nat. Genova, XXXIX, p. 82.

Two specimens, ♂ and ♀.

Japan. Dr. H. C. Wood.

Chorthippus*² *latipennis (Bolivar).

1898. *Stenobothrus latipennis* Bolivar, Ann. Mus. Civ. Stor. Nat. Genova, XXXIX, p. 83.

Eighteen specimens, 4 males, 13 females, 1 nymph.

Kioto, Japan. Y. Hirase (9), No. 17.

Japan. Dr. H. C. Wood (9).

This species was described from Korea and Yamada, Hondo, the latter locality being on the east coast not very far from Kioto.

Aiolopus*³ *tamulus (Fabricius).

1798. [*Gryllus*] *Tamulus* Fabricius, Entom. Syst., Suppl., p. 195.

One female.

Kioto, Japan. Y. Hirase.

As already pointed out by Brunner,⁴ this name far antedates *tricoloripes* Burmeister.

Mecostethus magister n. sp.

Type, ♂.

Japan. Dr. H. C. Wood.

This species appears to be closely related to the North American *M. lineatus* (Scudder), but differs in the greater size, the more sharply defined and constricted frontal costa, the comparatively

² This name, used by Fieber (*Lotos*, III, p. 100, May, 1853), should replace *Stenobothrus* Fischer on the grounds of priority.

³ As in the case of *Chorthippus*, this name has priority over *Epacromia* Fischer.

⁴ *Révision du Syst. Orthopt.*, p. 128.

shorter wings, and in the carination of the ventral surface of the subgenital plate. No relationship appears to exist with the European *Mecostethus grossus* (Linn.).

Head moderately prominent, the frontal costa forming a very marked angle at the junction with the fastigium; fastigium produced, the median and lateral carinæ well marked, and all terminating at the narrowly truncate apex; frontal costa slightly expanding ventrad, sulcate throughout, the margins slightly constricted at the ocellus; eyes large, ovoid, moderately prominent; antennæ depressed, very much longer than head and pronotum. Pronotum rugulose; cephalic margin truncate, caudal margin obtuse-angulate, lateral carinæ apparent only on the cephalic margin of the prozona, median carina well developed, uniform, severed by the transverse sulcus which crosses slightly caudal to the middle; lateral lobes with the ventro-cephalic angle rounded, tegmina exceeding the caudal femora. Mesosternal lobes separated by a space subquadrate in outline; metasternal lobes very narrowly separated caudad. Subgenital plate strongly produced, the caudal portion subhastate in outline, bearing a marked longitudinally disposed carina on the ventral surface. Caudal femora slender, genicular lobes rounded; tibiæ almost equaling the femora in length, bearing 12-13 spines on the margins.

Color (specimen from spirits).—General tint dull grayish-brown, eyes, postocular streak and lateral lobes of the pronotum reddish-brown. Ulnar area and extremity of the tegmina blackish, this color also suffusing the genicular region of the caudal femora and tibiæ as well as the distal extremities of the latter. Scapular area of the tegmina whitish.

Measurements.

Length of head and body,	28.5 mm.
Length of pronotum,	6.5 "
Length of tegmina	27 "
Length of hind femora,	19 "

Subfamily *Ædipodinæ*.

Edaleus nigrofasciatus (DeGeer).

1773. *Acrydium nigrofasciatum* DeGeer, Mém. Ins., III, p. 493, Pl. 41, fig. 5.

A series of 90 specimens of this very variable species. The following localities and sources were represented in the series:

Japan. Dr. H. C. Wood (4).

Yokohama, Japan. Rev. H. Loomis (30), Rehn Collection.

Kioto, Japan. Y. Hirase (54), Nos. 10 and 23.

Chemulpo, Korea. Dr. W. H. Jones (2).

With the extensive series examined ample opportunity was presented for studying the range of variation exhibited by this species. Several of the types would be regarded as distinct, if it were not that the extremes and intermediates occurred in the same locality. The variations have been studied under two heads—structure and coloration.

Structure.

The most peculiar and the most unusual structural form of this species is that in which the cephalic portion of the dorsal aspect of the pronotum is strongly inflated or bullate. Four specimens in the series illustrate this singular phase, between which and the normal condition no intermediates were examined. Kioto and Yokohama were the localities represented in the four specimens.

The other great structural difference is in the median carina of the pronotum. In the majority of cases it is straight or very slightly arcuate, with a slight incision at the transverse sulcus; in some cases it is much more arcuate on the prozona than in the metazona; in a few (7) it is highly arched, not notched by the transverse sulcus. The specimens belonging in the latter category are all from Yokohama.

Examples of this species are found both subbrachypterous and macropterous.

Coloration.

The two general types of coloration, the brown and green, as pointed out by Saussure, are present in the series, many representatives of each, and a great number of intermediates showing what a wide range this broadly diffused species has in the color scheme.

The extreme green phase has the base color of the head, pronotum and dorsal aspects of the closed tegmina and caudal femora, as well as portions of the pleuræ rich grass green, the lateral portions of the tegmina basally of a chocolate tint marbled with cream, the overlying tint being grouped into transverse bars anteriorly.

The extreme brown phase is of a general dull umber tint, the

maculations of the tegmina and posterior femora (these parts being uniform in the green phase) being brownish-black.

Between these two extremes are found many intermediates representing almost imperceptible gradations. Many individuals show variations which are individual or restricted to a comparatively few examples. The most important of these appear to be worthy of note.

The presence of four converging light lines on the pronotum somewhat in the form of a cross. These lines are present only in the brown phase, or closely related intermediates, and in some specimens are strongly marked, but as a rule are but faintly so. In DeGeer's original figure of this species (Pl. XLI, fig. 5) this pattern of coloration is represented, though in rather a crude manner. The blending of the chocolate marbling on the lateral portions of the tegmina to form transverse bars is also a noticeable character. This latter phase is mainly found in the green type.

Edaleus infernalis Saussure.

1884. [*Edaleus*] *infernalis* Saussure, Prodr. (Edipodiorum, p. 116.

Three specimens, 1 ♂ (?), 2 females.

Japan. No further data.

Kioto, Japan. Y. Hirase.

One specimen is apparently a male, but the tip of the abdomen is missing.

Pachytylus migratorius (Linnaeus).

1758. [*Gryllus*] (*Locusta*) *migratorius* Linnaeus, Syst. Nat., X ed., p. 432.

One female.

Chemulpo, Korea. Dr. W. H. Jones.

Pachytylus cinerascens (Fabricius).

1793. [*Gryllus*] *cinerascens* Fabricius, Ent. Syst., II, p. 59.

Three specimens, 1 male, 2 females

Chemulpo, Korea. Dr. W. H. Jones (2).

Chefoo, China. Dr. W. H. Jones (1).

Trilophidia annulata japonica Saussure.

1883. *Trilophidia annulata* var. *japonica* Saussure, Addit. Prodr. (Edipodiorum, p. 54.

Four specimens, 2 males, 2 females.

Kioto, Japan. Y. Hirase, No. 28.

Subfamily **Pyrgomorphinae**.**Atractomorpha bedeli** Bolivar.

1884. *Atractomorpha Bedeli* Bolivar, Monografía de los Pirgomorfinos, p. 69.

Thirty-two specimens, 9 males, 20 females, 3 nymphs.

Japan. Dr. H. C. Wood (3).

Yokohama, Japan. Rev. H. Loomis (2). Rehn Collection.

Kioto, Japan. Y. Hirase (27), Nos. 20 and 21.

One specimen from Kioto differs from the usual form in having the whole superior aspect of the insect speckled with blackish-brown instead of being uniform greenish. In the males the superior surface of the abdomen is bright carmine.

Subfamily **Locustinae** (*Acridinae* Auct.).**Oxya velox** (Fabricius).

1793. [*Gryllus*] *velox* Fabricius, Entom. Syst., II, p. 60.

Nineteen specimens, 10 males, 9 females.

Kioto, Japan. Y. Hirase. Nos. 18 and 19 (part).

As noticed by Brunner,⁵ this species, which usually passes as *hyla* Serville, should bear the name given above.

Oxya vicina Brunner.

1893. *O[xya] vicina* Brunner, Rév. du Syst. des Orthoptères, p. 152.

Thirty-one specimens, 16 males, 15 females.

Yokohama, Japan. Rev. H. Loomis (4), Rehn Collection.

Kioto, Japan. Y. Hirase (27), Nos. 18 and 19 (part).

This species is very closely allied to *O. velox*, but differs in several characters which, while not striking, are sufficient to differentiate it with little trouble.

As Brunner has simply given a key and a brief description of this species, the notes made after a comparative examination with specimens of *O. velox* may be of interest.

The ventral surface of the last segment of the abdomen in the female of *vicina* is longitudinally bicarinate for the greater part of its length; in *velox* this is smooth. The basal portion of the mediastine area of the tegmina in the female of *vicina* is moderately expanded, the margin gently rounded; in *velox* this section is but slightly more developed, but the greatest depth is caudal and not median, while the margin is abruptly excavated posteriorly, quite different from the gentle curve of *vicina*.

⁵ *Révision du Syst. des Orthoptères*, p. 152.

The tegmina in *velox* always exceeds the caudal femora in length, while in *vicina* they do not equal it. This is apparently the only method of distinguishing the males of the two species.

Another rather interesting character noticed is that in *velox* the dorsal aspect of the pronotum is uniform wood-brown, while in *vicina* it is greenish in all the specimens examined but one. Fabricius with little doubt had *velox* as restricted by Brunner, as his description particularly mentions the brown surface of the pronotum.

Locusta⁶ japonica (Bolivar).

1899. *Acridium Japonicum* Bolivar, Ann. Mus. Civ. Stor. Nat. Genova, XXXIX, p. 98.

Twenty-four specimens, 15 males, 9 females.

Japan. Dr. H. C. Wood (1).

Yokohama, Japan. Rev. H. Loomis (23), Rehn Collection.

This species possesses a dull, uniformly colored phase of which three representatives are in the series examined.

Burr⁷ erroneously credits this species to Burmeister, probably through a slip of the pen.

Goptacra fœdata (Serville)?

1839. *Acridium fœdatum* Serville, Orthoptères, p. 662.

Six specimens, 1 male, 5 females.

Japan. Dr. H. C. Wood.

As these specimens have been immersed for a considerable time in spirits, little can be determined on comparison with Serville's description. It is mainly by the elimination of *C. prævorsa* Stal, of which *cyanoptera* Stal and *annulipes* Bolivar appear to be synonyms,⁸ and which possesses a non-sulcate frontal costa, that we arrive at some idea of the relationship of the specimens. Serville's species has been recorded from Java, Burma and Cambodia.

Podisma dairisama Scudder?

1897. *Podisma dairisama* Scudder, Proc. U. S. Nat. Mus., XX, p. 114.

Three males.

Japan. Dr. H. C. Wood.

These specimens, while apparently referable to this species, differ

⁶ For the use of *Locusta* in this connection see Rehn, *Ent. News*, XIII, p. 102.

⁷ *Ent. Month. Magaz.*, XXXIV, p. 29.

⁸ Vide Brunner, *Révision du Syst. des Orthopt.*, pp. 159-160.

in the very short tegmina, which are in no case half as long as the tegmina, and in the quadrate interspace between the mesosternal lobes and excavated blunt tips to the cerci. Regarding the latter Scudder says (*antea*, p. 115) "blunt-tipped," but the figure (Pl. VIII, fig. 7) gives no idea of the character of the apex as found in the specimens here examined.

Podisma mikado (Bolivar).

1891. *Pezotettix Mikado* Bolivar, *Anales Soc. Españ. Hist. Nat.*, XIX, cuad. 3, p. 323.

Eight specimens, 1 male, 4 females, 3 nymphs.

Japan. Dr. H. C. Wood.

This species was originally described from the female alone, and on comparing the description with my specimens it seems that they are identical. In the general form of the subgenital plate the male agrees with *Podisma* as restricted by Scudder,⁹ but in the caudal extension of the pronotum it agrees with *Eupodisma* Scudder,¹⁰ which has for its type *Podisma prinnoa* Fischer de Waldheim, from Transbaicalia and the Amur region of eastern Siberia.

As the male has never been described, a few notes on the abdominal appendages may be of interest.

Supra-anal plate obtuse-angulate at the apex, with a median shallow sulcus which is centrally constricted. Cerci tapering in the basal two-thirds, but apically expanded and excavated, the terminal portion slightly depressed. Furcula rounded, scarcely perceptible lobes. Subgenital plate very broad basally, with an acuminate subapical process; margin circular, entire.

Eyprepocnemis plorans (Charpentier).

1825. *Gryllus plorans* Charpentier, *Horæ Entomologicæ*, p. 134.

Five females.

Yokohama, Japan. Rev. H. Loomis. Rehn Collection.

⁹ *Proc. U. S. Nat. Mus.*, XX, pp. 12 and 111.

¹⁰ *Ibid.*, pp. 12, 112 and 117.